

apparently extended from N. 60°, W. 20°, to N. 65°, E. 10°; by the 18th the eastern portion of this low pressure had passed North Cape and turned southeast into Russia.

H. This was the continuation of low area No. IX of the United States series, which was central in the Gulf of Saint Lawrence on the 17th; it passed toward east-northeast rapidly and was off the coast of Ireland on the 19th; then moved northeast, while a secondary depression formed in the Irish Channel; it was almost stationary between Scotland and Iceland from the 20th to the 22d, when it was joined by *I*, and, together with *J* and *K*, developed into a large area of low pressure which, on the 25th, extended from the middle of the north Atlantic over Scandinavia and Russia.

I. This was a continuation of low area No. XI of the United States series, which, on the 20th, was central south of Newfoundland and moved thence northeast, being at N. 57°, W. 35°, on the 21st, and N. 60°, W. 15°, on the 22d, when it had joined with *H*.

J. This was the continuation of low area No. XII, United States series, which passed eastward over southern Labrador on the 21st, and was central on the 23d at about N. 56°, W. 30°. On the 24th it was apparently south of Iceland, and on the 25th at N. 64°, W. 5°.

K. This was a continuation of low area No. XIII, which was central south of Newfoundland on the 24th, and at N. 52°, W. 35°, on the 25th; it passed quite near Iceland, while an area of high pressure pushed northward over Europe, so that, on the 28th, a region of low pressure apparently connected *K*, *L*, and *M*, and extended from James Bay and Lake Superior over Labrador and southern Greenland. On the 29th and 30th the extreme northeastern end of this region moved southeast and developed into an extensive low area in northern Russia on the 30th and 31st, which apparently represents the further development of the North Atlantic storm area *K*.

L. This was a continuation of low area No. XIV of the United States series, which was central east of Cape Breton on the 26th. It developed into a long oval on the 27th, and disap-

peared on the 29th southwest of Iceland as a branch of the extensive low pressure just described.

M. This was a continuation of low area No. XV, United States series, which was central on the southern coast of Labrador on the 29th; it moved east-southeast and was at N. 47°, W. 47°, on the 30th, after which it filled up and disappeared in the presence of the extensive area of high pressure that then stretched from central Europe westward to the middle of the Atlantic.

OCEAN ICE IN DECEMBER.

The limits of the regions within which field ice or icebergs were reported for December, 1898, are shown on Chart I by crosses. On the 27th one small berg was reported in N. 47° 05', W. 50° 43'; on the 29th one large berg was observed in N. 47° 16', W. 49° 36'; on the 31st in N. 47° 35', W. 49° 00' a berg about 60 feet high was reported.

In December, 1882, 1883, 1884, 1886, and 1888, no Arctic ice was reported near Newfoundland and the Grand Banks. In 1885 several bergs were observed off the Newfoundland coast the early part of the month. In 1887 a small berg was reported in N. 46° 10', W. 47° 28' on the 26th, and a small berg in N. 48° 20', W. 48° 40' on the 28th. In 1889 large quantities of Arctic ice were reported over and near the Grand Banks. In 1890 a large berg was observed in N. 49° 39', W. 47° 50' on the 13th. Arctic ice was not reported for December, 1891 and 1892.

OCEAN FOG IN DECEMBER.

The limits of fog belts west of the 40th meridian, as determined by reports of shipmasters, are shown on Chart I by dotted shading. East of the 55th meridian fog was reported on 11 dates; between the 55th and 65th meridians on one date; west of the 65th meridian fog was not reported on any date. Compared with the corresponding month of the last 6 years the dates of occurrence of fog east of the 55th meridian numbered 7 more than the average, and west of the 55th meridian 4 less than the average.

TEMPERATURE OF THE AIR (expressed in degrees Fahrenheit).

The distribution of the monthly mean temperature of the air over the United States and Canada is shown by the dotted isotherms on Chart II; the lines are, however, not drawn for the higher irregular surface of the Rocky Mountain plateau; the temperatures have not been reduced to sea level, and the isotherms, therefore, relate to the average surface of the country over which they are drawn; in mountainous regions such isotherms would be controlled largely by the topography, and it is, therefore, not practicable to present the temperature data in this manner unless a contour map on a large scale is published as a base chart.

In the table of meteorological data from voluntary observers the actual mean temperature is given for each station, and in the tables of climatological data for the regular stations of the Weather Bureau both the mean temperatures and the departures from the normal are given. In the latter table the stations are grouped by geographical districts, for each of which is given the average temperature and departure from the normal. The normal for any district or station may be found by adding the departures to the current average when the latter is below the normal and by subtracting when it is above.

For the regular stations of the Weather Bureau the monthly mean temperature is the simple mean of all the daily maxima and minima; for voluntary stations a variety of methods of computation is necessarily allowed, as shown by the notes appended to the table of meteorological data.

During December, 1898, the mean temperature was highest (70.8) at Key West. The temperature averaged between 60 and 70 throughout the peninsula of Florida and on the immediate coast of Louisiana and Texas; it was slightly above 60 at a few stations in southern California near Arizona. The temperature averaged 32 in a zone that included Cape Cod, Rhode Island, southern Connecticut, northern New Jersey, central Pennsylvania, Ohio, Indiana, Illinois, northern Missouri, northern Kansas, southern Nebraska, the greater part of Colorado, Utah, northern Nevada, eastern Oregon, and northeastern Washington. The lowest average temperatures appearing on our maps were -8.0 at Winnipeg, Manitoba, and -8.2 at Prince Albert, Saskatchewan.

DEPARTURES FROM NORMAL TEMPERATURE.

As compared with the normal for this month temperatures have been deficient by about 5, or more, in northern New England, the Valley of the Saint Lawrence, the northern portion of the Lake region, Wisconsin, Minnesota, and Manitoba. Among the principal deficits are: -5.1 at Chatham, N. B., -8.7 at Rockliffe, Ont., -13.8 at White River, Ont., -11.0 at Winnipeg, Manitoba, and -9.0 at Moorhead, Minn. The temperature has been normal or above normal in all the south Atlantic and Gulf states and the Pacific coast and Rocky Mountain region. The maximum excesses have been: +5.5 at Dodge City, Kans., +4.9 at Corpus Christi, Tex., +4.3 at Abilene, Tex., +4.2 at Denver, Colo.

The following table shows for certain stations, as reported

by voluntary observers, (1) the normal temperature for December for a series of years; (2) the length of record during which the observations have been taken, and from which the normal has been computed; (3) the mean temperature for December, 1893; (4) the departure of the current month from the normal; (5) the extreme monthly means for December and the years of their occurrence during the period of observation:

State and station.	(1) Normal for the month of Dec.	(2) Length of record.	(3) Mean for Dec., 1893.	(4) Departure from normal.	(5) Extreme monthly means for December.			
					Highest.	Year.	Lowest.	Year.
<i>Arizona.</i>	0	Years	0	0	0		0	
Fort Apache	37.6	22	40.2	+ 2.6	45.0	1889	27.6	1891
Fort Mohave	53.1	21	.....	.....	59.2	1875	47.6	1891
Whipple Barracks	37.8	21	34.7	- 3.1	42.2	1889	31.4	1891
<i>Arkansas.</i>								
Keesees Ferry	30.6	12	42.4	+ 2.8	55.3	1889	29.1	1884
<i>California.</i>								
Riverside	52.7	11	53.8	+ 1.1	56.5	1882	48.3	1891
<i>Colorado.</i>								
Las Animas	30.7	10	32.6	+ 1.9	41.9	1889	19.5	1884
<i>Florida.</i>								
Merritts Island	63.3	11	65.5	+ 2.2	68.0	1891	58.0	1885
<i>Georgia.</i>								
Forsyth	50.0	19	54.0	+ 4.0	61.3	1889	39.8	1876
<i>Idaho.</i>								
Boise Barracks	33.1	18	34.3	+ 1.2	37.7	1886	28.1	1884
Fort Sherman	30.6	10	34.2	+ 3.6	37.9	1890	16.0	1884
<i>Indiana.</i>								
Lafayette	30.0	12	30.0	0.0	43.8	1889	21.3	1880
<i>Iowa.</i>								
Cresco	17.7	22	16.6	- 1.1	34.0	1877	4.5	1876
<i>Kansas.</i>								
Eureka Ranch	32.6	10	35.4	+ 2.8	43.6	1889	21.3	1884
Independence	35.1	21	39.6	+ 4.5	49.3	1889	25.4	1884
<i>Louisiana.</i>								
Grand Coteau	56.0	11	55.9	- 0.1	65.0	1889	51.8	1887
<i>Maine.</i>								
Orono	21.3	23	14.8	- 6.5	31.6	1891	11.4	1890
<i>Maryland.</i>								
Cumberland	32.1	22	35.2	+ 3.1	43.2	1889	26.0	1880
<i>Michigan.</i>								
Kalamazoo	29.5	17	28.4	- 1.1	40.2	1889	16.7	1876
<i>Missouri.</i>								
Sedalia	36.3	8	35.2	- 1.1	49.4	1889	25.7	1886
<i>Montana.</i>								
Fort Custer	23.4	13	31.0	+ 7.6	33.1	1885	5.6	1884
<i>Nebraska.</i>								
Fort Robinson	28.6	9	30.4	+ 1.8	38.0	1889	12.4	1884
Genoa (near)	23.7	18	25.8	+ 2.1	35.4	1889	11.8	1879
<i>Nevada.</i>								
Browns	35.2	21	.....	.....	42.1	1871	26.8	1873
Carson City	34.0	16	37.3	+ 3.3	40.8	1886	29.1	1891
<i>New Hampshire.</i>								
Hanover	20.8	22	19.0	- 1.8	30.5	1881	10.2	1872
<i>New Mexico.</i>								
Deming	46.6	11	53.4	+ 6.8	53.4	1833	38.4	1891
Fort Wingate	32.7	22	38.6	+ 5.9	41.0	1889	23.7	1887
<i>New York.</i>								
Cooperstown	27.0	22	24.8	- 2.2	33.9	1891	14.7	1876
Plattsburg Barracks	21.7	22	19.2	- 2.5	33.8	1891	11.3	1890
<i>North Carolina.</i>								
Lenoir	38.4	21	39.9	+ 1.5	48.9	1889	29.1	1876
<i>Oklahoma.</i>								
Fort Reno	39.7	10	43.2	+ 3.5	52.6	1889	27.9	1884
Fort Sill	40.3	21	44.2	+ 3.9	52.3	1889	31.0	1884
Fort Supply	37.6	13	37.7	+ 0.1	49.2	1889	29.9	1887, 92
<i>Oregon.</i>								
Bandon	46.7	9	47.6	+ 0.9	52.5	1888	43.6	1884
<i>Pennsylvania.</i>								
Dyberry	25.6	22	25.9	+ 0.3	31.6	1891	17.3	1876
Grampian	25.8	22	29.4	+ 3.6	37.0	1877	16.0	1876
Wellsboro	29.5	14	28.3	- 1.2	39.5	1881	22.2	1890
<i>South Carolina.</i>								
Statesburg	47.8	12	49.9	+ 2.1	56.6	1889	43.6	1882
<i>South Dakota.</i>								
Fort Sully	19.1	22	21.2	+ 2.1	30.0	1881	2.9	1879
<i>Texas.</i>								
Austin	50.2	21	56.2	+ 6.0	65.5	1889	42.1	1872
Silver Falls	45.0	7	46.4	+ 1.4	50.1	1889	37.6	1892
<i>Utah.</i>								
Terrace	27.8	21	35.0	+ 7.2	37.0	1888	17.0	1878
<i>Vermont.</i>								
Stratford	22.0	20	19.5	- 2.5	31.2	1891	13.4	1890
<i>Virginia.</i>								
Dale Enterprise	38.2	13	37.6	- 0.6	49.0	1889	28.4	1882
<i>Washington.</i>								
Fort Townsend	40.8	18	45.6	+ 4.8	45.6	1893	33.0	1884
<i>West Virginia.</i>								
Parkersburg	38.2	12	37.2	- 1.0	47.2	1889	29.6	1886
<i>Wisconsin.</i>								
Madison	23.0	21	20.0	- 3.0	38.4	1877	10.8	1876
<i>Wyoming.</i>								
Fort Washakie	22.9	10	27.6	+ 4.7	29.6	1889	16.4	1892

YEARS OF HIGHEST MEAN TEMPERATURE FOR DECEMBER.

The mean temperature for December, 1893, was the highest

on record at several stations, as follows: Port Angeles, Wash., 41.5, being 3.3 in excess of the normal, the highest previous temperature for December being 41.0 in 1888. Red Bluff, Cal., 50.2, or 0.6 above the normal; the highest previous was 50.0, in 1886. Carson City, Nev., 39.0, or 4.1 above the normal; the previous highest was 38.5, in 1888. Helena, Mont., 31.2, 7.5 above the normal; the previous highest was 31.1, in 1885.

The highest mean temperature for December was noted generally over New England and eastern New York in 1891; over northern Dakota, the northern plateau region, and southern California in 1890; from the middle and southern Rocky Mountain regions eastward to the middle and south Atlantic coasts in 1889; along the north Pacific coast and over Oregon, northern California, and northern Nevada in 1886; on the northeast slope of the Rocky Mountains in 1885; and from the upper Mississippi valley over the upper lake region in 1877.

YEARS OF LOWEST MEAN TEMPERATURE FOR DECEMBER.

The mean temperature for December, 1893, was the lowest on record at Saint Vincent, Minn., being -2.7, or 9.1 below the normal; the lowest previous temperature for December was -0.7, in 1886.

The lowest mean temperature for December was noted at points in California, Nevada, and New Mexico in 1891; in the middle and northern Rocky Mountain regions in 1884; and generally east of the Mississippi River and south of the Lake region in 1876.

MAXIMUM TEMPERATURE.

The highest temperatures recorded at regular stations of the Weather Bureau are given in the table of climatological data, from which the following are selected: Key West, Tampa, Titusville, Fla., and San Diego, Cal., 82; San Antonio, Tex., and Yuma, Ariz., 83; Los Angeles, Cal., 88; Eastport, Me., 52; Northfield, Vt., 54; Sault Ste. Marie, Mich., 38; Duluth, Minn., 43; Saint Vincent, Minn., 42; Havre, Mont., 52; Spokane, Wash., 49; Tatoosh Island, Wash., 59; Port Angeles, Wash., 61.

MINIMUM TEMPERATURE.

The lowest temperatures recorded at regular stations of the Weather Bureau are given in the table of climatological data, from which the following are selected: Key West, Fla., 56; Tampa and Titusville, Fla., 38; San Antonio, Tex., 20; Corpus Christi, Tex., 36; Yuma, Ariz., 34; San Diego, Cal., 38; San Francisco, Cal., 37; Eastport, Me., -11; Northfield, Vt., -27; Sault Ste. Marie, Mich., -14; Duluth, Minn., -19; Saint Vincent, Minn., -24; Havre, Mont., -20; Spokane, Wash., 16; Port Angeles, Wash., 28; Tatoosh Island, Wash., 30.

TEMPERATURE, JANUARY TO DECEMBER, 1893.

For the period, January 1st to December 31st, the average temperature was about normal in the east and west Gulf states, the extreme northwest, and the southern Rocky Mountain plateau. In regions where the temperature was deficient the average deficit for this period was as follows: Northern plateau, 2.5; north Pacific coast, 2.0; middle Pacific coast, 1.7; south Pacific coast, 1.1; middle plateau, 1.3; upper Mississippi valley, 1.5; New England, 1.3; middle Atlantic states, 1.1; the Lake region, 1.0; northern slope, 0.9; Missouri Valley, 0.8; Ohio Valley and Tennessee, 0.7; middle slope, 0.6; south Atlantic states, 0.5; Key West, Fla., 0.4; east Gulf states, 0.2. The only regions in which the average temperature for this period was in excess are the southern slope, 1.6; and the east Gulf states, 0.2.

DAILY AND MONTHLY RANGES OF TEMPERATURE.

The greatest daily range of temperature is given for each of the regular Weather Bureau stations in the table of climatological data. The extreme monthly maximum and

minimum temperatures are also there given, from which the monthly ranges may be deduced. The monthly range has averaged 50, or more, from central Texas northeastward to New England and northwestward to Montana, except at a few stations on the shores of the Lakes; the monthly ranges of 70, or more, are reported as follows: Northfield, Vt., 81; Valentine, Nebr., and Saint Vincent, Minn., 76; Fort Benton, Mont., and Bismarck, N. Dak., 73; Keokuk, Iowa, and Havre, Mont., 72.

The least monthly ranges have been: Key West, Fla., 26; Titusville, Fla., 37; San Diego, Cal., 34; San Francisco, Cal., 35; Eureka, Cal., 27; Tatoosh Island, Wash., 19; Fort Canby, Wash., 16.

LIMITS OF FREEZING TEMPERATURE.

The southern limit of the region within which the air has had a freezing temperature at some time during the month is approximately shown by the full and dotted lines on Chart VI joining the places at which minimum temperatures of 32 and 40, respectively, occurred within the instrument shelters of the Weather Bureau; the latter minimum is usually accompanied by a more or less severe frost on the ground outside of the shelter. During December, 1893, the line of minimum 40 crossed the southern portion of the peninsula of Florida south of the stations of Titusville and Tampa; it does not reappear on either the Gulf or the California coasts. The line of minimum 32 passes from Cape Hatteras along the south Atlantic coast, crossing Florida to Cedar Keys and thence westward to New Orleans, La.; it then follows the curved coast line of Texas about 100 miles from the Gulf; it reappears near Yuma and keeps within 100 miles of the California coast until it reaches Vancouver Island.

PERIODS OF HIGH TEMPERATURE.

The most interesting period of high temperature began on the eastern slope of the Rocky Mountains from Montana to Nebraska on the 21st; as this area of high temperature moved eastward the maximum temperatures of the month occurred on the 22d from Oklahoma to Minnesota, on the 23d from Missouri to Lake Superior, on the 24th from Tennessee to Michigan, on the 25th from Georgia to New York and New England.

PERIODS OF LOW TEMPERATURE.

The minimum temperatures for the month occurring in connection with the movement of areas of high pressure were experienced in Montana and the Dakotas on the 12th, Minnesota and New York on the 13th, New England on the 14th. Another series of low temperatures was that which occurred from Nebraska and Iowa to Texas on the 1st, and moving eastward covered Ohio and the lower lake region on the 2d. Another area of minimum temperatures covered Arkansas, Louisiana, and southeastern Texas on the 4th, whence it moved northeastward over Mississippi, Alabama, Georgia, and Tennessee on the 5th, and North Carolina, Maryland, and central Pennsylvania on the 6th. The lowest temperatures on the Pacific coast generally occurred on the 28th, 29th, and 30th, whence they spread over the central and southern Rocky Mountain region on the 30th and 31st.

FROST.

The reports of frost injurious to vegetation are as follows: At Orange City, Fla., the frosts of the 6th and 19th injured gardens. At Myers, Fla., the frost of the 19th damaged vegetation, and in many parts of the county vegetation was killed. Titusville, Fla., 19th, a heavy frost in the country, some tomatoes seriously injured.

The following table shows the dates of the occurrence of the first light frost, the first heavy frost, and the first snow-fall at the respective stations:

Dates of first light and heavy frosts and snow, December, 1893.

State and station.	First frost.			State and station.	First frost.		
	Light.	Heavy.	Snow.		Light.	Heavy.	Snow.
Alabama.				Illinois.—Continued.			
Chepultepec.....			17	Mount Carmel.....			4
Gadsden.....			18	Philo.....			2
Lynn.....			18	Indiana.			
Scottsboro.....			3	Bedford.....			1
Talladega.....			17	Butlerville.....			3
Union Springs.....			31	Columbus.....			17
Arizona.				Degonia Springs.....			17
Arizona Canal Co. Dam.....	29			Jasper.....			17
Florence.....	25			Jeffersonville.....			17
Oracle.....		23		Laconia.....			17
Payson.....		23		Marango.....			16
Wilgus.....		15		Mount Vernon.....			3
Arkansas.				New Albany.....			3
Corning.....			30	Princeton.....			3
Fayetteville.....			2	Rushville.....			3
Fort Smith.....			2	Terre Haute.....			2
Helena.....			2	Union City.....			2
Keesee Ferry.....			3	Vevay.....			3
Little Rock.....			30	Indian Territory.			
Lonoke.....			30	Gwendale.....			3
New Gascony.....			30	Kemp.....			3
Seary.....			3	Parcell.....			3
California.				Iowa.			
Anderson.....		3		Glenwood.....			3
Berkley.....	15			Washington.....			2
Centerville.....		30		Kansas.			
Chino.....	29			Altoma.....			2
Claremont.....		29		Columbus.....			2
Cloverdale.....		28		Elk City.....			2
Colegrove.....	28			Emporia.....			1
Colusa.....		16		Gresham.....			2
Duarte.....	28			Independence.....			2
Fall Brook.....	11	29		McPherson.....			2
Georgetown.....			24	Marietta.....			2
Grass Valley.....			24	Oswego.....			1
Lick Observatory.....			24	Rome.....			2
Los Angeles.....	28			Sedan.....			2
Mokelumne Hill.....		15		Yates Center.....			2
Napa.....		29		Kentucky.			
Nevada City.....		24		Bowling Green.....			17
Newcastle.....	23			Burnside.....			4
Oleta.....		21		Canton.....			3
Pasadena.....		29		Carrollton.....			2
Petaluma.....	3			Cattlettsburg.....			18
Placerville.....		24		Edmonton.....			3
Point Reyes Light.....	28			Eddyville.....			4
Pomona.....		29		Elizabethtown.....			3
San Francisco.....	23			Eubanks.....			3
Santa Cruz.....		15		Greendale.....			3
Sonoma.....	29			Greensburg.....			17
Tchachapi.....		25		Harrodsburg.....			2
Ventura.....		27		Hendricks.....			4
Wenrich Ranch.....		24		Louisville.....			2
Yreka.....		14		Paducah.....			3
Connecticut.				Russellville.....			3
Colchester.....		3		Shelby City.....			3
Lehanon.....		3		Shelbyville.....			2
North Grosvenor Dale.....		3		Louisiana.			
Norwalk.....		3		Baton Rouge.....		4	
South Manchester.....		3		Emile.....		5	
Stevenson.....		16		Franklin.....		4	
Storrs.....		3		Grand Coteau.....		4	
Voluntown.....		3		Hanburg.....		4	
Delaware.				Houma.....		5	
Dover.....		5		Lake Charles.....		4	
Florida.				Paincourtville.....		4	
Brooksville.....		18		Port Eads.....		5	
Clermont.....		19		Rayne.....		8	
DeLand.....		19		Thibodaux.....		5	
Edisto.....		6		Wallace.....		4	
Fedders Point.....		19		Winnboro.....			6
Fort Meade.....		5		Maine.			
Homeland.....		6		Fairfield.....			1
Kissimmee.....		6		Maryland.			
Manatee.....		6		Cambridge.....			5
Myers.....		19		Easton.....			5
Ocala.....		6		Massachusetts.			
Orange City.....		6		Andover.....			5
Orlando.....		18		Ashland.....			5
Oxford.....		19		Cambridge.....			3
Pensacola.....		5		Fall River.....			3
Plant City.....		7		Framingham.....			5
Saint Petersburg.....		19		Hyannis.....			3
Tallahassee.....		5		Long Plain.....			5
Tampa.....		6		Lowell.....			1
Tarpon Springs.....		6		Ludlow Center.....			3
Titusville.....		19		Lynn.....			3
Georgia.				Middleboro.....			3
Adairsville.....			23	New Bedford.....			3
Atlanta.....			17	Salem.....			2
Covington.....			17	Somerset.....			3
Dahlonega.....			17	Vineyard Haven.....			1
Lafayette.....			19	Williamstown.....			1
Whitesburg.....			17	Winthrop.....			1
Illinois.				Mississippi.			
Beardstown.....			3	University.....			3
Cairo.....			3	Water Valley.....			16
Carlinville.....			2	Missouri.			
Chillicothe.....			17	Appleton City.....			2
Greenville.....			1	Arlington.....			3
Jordan Grove.....			3	Arthur.....			2
McLeansboro.....			3	Big Piney.....			3
Mascoutah.....			2	Birch Tree.....			3

Dates of first light and heavy frosts and snow—Continued.

State and station.	First frost.			State and station.	First frost.		
	Light.	Heavy.	Snow.		Light.	Heavy.	Snow.
<i>Missouri—Cont'd.</i>				<i>New Jersey—Cont'd.</i>			
Bluffton			3	Camden			3
Boonville			2	Cape May C. H.			1
Darksville			3	Dover			3
East Lynne			2	Friesburg			3
Enma			3	Gillette			4
Fayette			2	Hightstown			3
Fulton			3	Imlaystown			2
Gayoso			30	Newton			2
Glasgow			2	Oceanic			4
Grove Dale			3	Pensauken			3
Half Way			2	Readington			3
Harrisonville			2	River Vale			3
Hastain			3	Tenafly			3
Hermann			2	Vir-land			5
Houston			3	Wating			5
Ironton			2	Woodbine			6
La Plata			2	<i>New Mexico.</i>			
Lebanon			2	Albert			5
Linn Creek			2	East Las Vegas			1
Marceline			2	Gallinas Spring			29
Mine La Motte			2	<i>New York.</i>			
New Haven			3	New York			3
New Madrid			3	Poughkeepsie			3
New Palestine			2	Setauket			3
Oak Ridge			2	<i>North Carolina.</i>			
Olden			2	Asheville			18
Phillipsburg			3	Chapel Hill			5
Potosi			3	Charlotte			5
Panacea			3	Horse Cove			7
Rolla			2	Lenoir			2
Round Spring			3	May			5
Saint Charles			3	Mount Pleasant			5
Saxoxie			2	Oak Ridge			5
Steelville			2	Pittsboro			5
Vancleve			2	Rockingham			5
Virgil City			2	Salisbury			5
Warrenton			3	Saxon			5
<i>Nevada.</i>				Shou			5
Battle Mountain			13	Smithfield			5
<i>New Hampshire.</i>				Soapstone Mount.			5
Durham			3	Southern Pines			5
<i>New Jersey.</i>				Washington			31
Asbury Park			4	<i>Ohio.</i>			
Atlantic City			4	Bloomington			2
Belvidere			5	Cadiz			18
Blairstown			3	Caledonia			2
Bridgeton			5	Cherry Fork			2

Dates of first light and heavy frosts and snow—Continued.

State and station.	First frost.			State and station.	First frost.		
	Light.	Heavy.	Snow.		Light.	Heavy.	Snow.
<i>Ohio—Cont'd.</i>				<i>South Carolina—Cont'd.</i>			
Circleville			3	Coronaca			5
Frankfort			1	Flint Hill			5
Granville			1	Society Hill			5
Greenfield			2	Tatum Station			4
Guyssville			17	Tillers Ferry			4
Hackney			2	Wateree			5
Jacksonboro			9	<i>Tennessee.</i>			
Mountview			3	Ashwood			30
New Paris			2	Byrdstown			17
North Royalton			1	Charleston			18
Ripley			2	Chattanooga			3
Rush Creek			3	Clarksville			3
Sharon Center			2	Florence			3
Sidney			1	Franklin			2
Thurman			2	Greeneville			3
Vanceburg			3	Hohenwald			3
Walnut			4	Knoxville			17
Waynesville			2	Lynnville			3
Wooster			3	Memphis			30
<i>Oklahoma.</i>				Nashville			3
Burnett			1	Newport			16
Fort Reno			1	Nunnally			17
Oklahoma			2	Rogersville			3
Ponca			3	Rugby			3
<i>Oregon.</i>				Springdale			17
Ashland			13	Trenton			3
Williams			14	Wier			2
<i>Pennsylvania.</i>				<i>Texas.</i>			
Bloomington			3	Brazoria			4
Brooksville			2	Brenham			7
Confluence			2	Burnet			7
Salisbury			3	Corpus Christi			7
South Eaton			1	Devine		7	7
<i>Rhode Island.</i>				Hallettsville			5
Block Island			3	Llano			7
Bristol			3	New Braunfels			4
Kingston			3	Orange			4
Lonsdale			3	San Marcos			7
Narragansett Pier			3	<i>Utah.</i>			
Newport			3	Richfield			15
Pawtucket			3	Saint George			24
Providence			3	<i>Virginia.</i>			
<i>South Carolina.</i>				Big Stone Gap			16
Blenheim			2	Blacksburg			17
Camden			5	Danville			5
Cheraw			5	Warsaw			6
Columbia			5				

PRECIPITATION (expressed in inches and hundredths).

The distribution of precipitation over the United States and Canada for December, 1893, as determined by reports from about 2,000 stations, is exhibited on Chart III. In the meteorological tables the total precipitation is given for each station; the departures from the normal are given for regular stations of the Weather Bureau in the table of climatological data. The figures opposite the names of the geographical districts in the columns for precipitation and departure from the normal show, respectively, the averages for the several districts. The normal for any district may be found by adding the departure to the current mean when the precipitation is below the normal and subtracting when above.

NORMAL PRECIPITATION.

In December the monthly precipitation is usually greatest on the north Pacific coast, where it exceeds 10.00; the normal amount exceeds 8.00 along the Pacific coast north of the 38th parallel, in parts of northeastern California, and in a small area of northeastern Louisiana; and exceeds 4.00 from the middle and east Gulf coasts to the middle Ohio valley, along the immediate Atlantic coast from North Carolina to southern New England, and over Nova Scotia and southeastern Maine. Except in parts of the northern plateau region, the monthly precipitation is less than 1.00 over the greater part of the Rocky Mountain and plateau regions, and thence over Kansas, Nebraska, the Dakotas, and Minnesota.

PRECIPITATION FOR DECEMBER, 1893.

In December, 1893, the monthly precipitation exceeded 10.00 at a few points only in eastern Oregon and Washington,

and also at Halifax, N. S.; it was between 4.00 and 6.00 on the western slope of the Rocky Mountains, from northern California to Vancouver Island, and over a portion of Michigan, New York, and New England. It was generally less than 2.00 from the Mississippi Valley westward, and less than 0.5 was reported from Texas, New Mexico, and Arizona.

DEPARTURES FROM NORMAL PRECIPITATION.

The precipitation for December was slightly in excess of the normal in New England, the Lake region, the Dakotas, and northward throughout the Canadian Provinces. It was generally deficient throughout the United States south of latitude 42°. The principal deficits were: 3.5 at Kittyhawk, N. C., and Mobile, Ala.; 3.0 at San Francisco, Cal., and Roseburg, Ore.; 3.6 at Portland, Ore.; 2.9 at Galveston, Tex.; 2.7 at Montgomery, Ala. The principal excesses were: 4.6 at Nantucket, Mass.; 5.0 at Halifax, N. S.; 3.6 at Marquette, Mich.; 2.1 at Olympia, Wash.; 2.8 at Edmonton, Alberta; 3.3 at Yarmouth, N. S.

Considered by districts the monthly precipitation for December, 1893, when compared with the normal for the month, furnishes the following percentages (the precipitation is in excess when the percentage of the normal exceeds 100): Extreme northwest, 182; upper lake region, 150; New England, 140; lower lake region, 114; north Pacific coast, 98; south Atlantic states, 84; middle Atlantic states, 82; northern slope, 82; south Pacific coast, 82; Ohio Valley and Tennessee, 75; Missouri Valley, 75; upper Mississippi valley, 71; southern plateau, 71; Key West, Fla., 63; northern